Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented) A claw pole type actuator of a single-phase structure, comprising:

a stator yoke composed of a pair of substantially circular planar yokes formed of a soft magnetic material, a number N of polar teeth which axially protrude from inner peripheral edges of the respective planar yokes and which are disposed to face each other, extending in an axial direction, wherein each of said polar teeth has the same circumferential length, wherein said polar teeth stay within a range of 220/N to 260/N degrees at central angle, and wherein said polar teeth are disposed respectively at a spacing of approximately 180 degrees in terms of an electrical angle, and a cylindrical ring provided on outer peripheral edges of one of said planar yokes;

an armature being constituted by installing a coil formed by winding a magnetic wire in a coil receiving section shaped like an annular recess formed by said planar yokes, said polar teeth, and said cylindrical ring of said stator yoke;

a rotor being concentrically disposed within the stator yoke and being adapted for repetitive rotational movement within a set angular range in response to energization of said coil, said angular range being less than 360° and having its endpoints defined by a first angular position and a second angular position, and wherein said rotor is further adapted to be held in either said first angular position or said second angular position by a magnetic detent torque when said coil is deenergized, said rotor having a magnet, said magnet having a number N of magnetic poles, wherein a relationship between said detent torque and a rated torque is expressed as $Trate/4 \leq Td \leq 3*Trate/4$, wherein Trate denotes a maximum torque value in Nm when a rated current is passed, and wherein Td denotes a maximum torque value in Nm when a coil is in a deenergization mode; and

a stator assembly which has flanges with a bearing provided on both end surfaces of said armature and in which said rotor being installed to face said polar teeth of said stator with a

minute gap provided therebetween, wherein said flanges are composed of a nonmagnetic material;

wherein a number of said polar teeth equals the number N of rotor magnetic poles.

2. (previously presented) An actuator according to Claim 1, wherein said stator yoke is comprised of a first stator yoke in which a planar yoke and a polar tooth are combined into one piece, and a second stator yoke in which a planar yoke, a polar tooth and a cylindrical ring are combined into one piece.

3. (original) An actuator according to Claim 1, wherein a pair of stator yokes, each being composed of said planar yoke and said cylindrical ring that are combined into one piece, are disposed to face each other.

4. (original) An actuator according to Claim 1, wherein a rotation of said rotor is restricted by a stopper so that a maximum angle of the rotational motion stays within a range of 120/N to 240/N degrees.

5. (original) An actuator according to Claim 4, wherein said stopper is incorporated in said actuator.

6. (canceled)

7. (canceled)

8. (original) An actuator according to Claim 1, wherein air gaps in a radial direction formed by said polar teeth and said rotor magnet are uneven, and air gaps at central portions of said polar teeth are narrower than air gaps at ends of said polar teeth.

9. (canceled)

10. (canceled)

11. (previously presented) A claw type actuator of a single-phase structure, comprising:

a stator yoke composed of a pair of substantially circular planar yokes formed of a soft magnetic material, polar teeth which axially protrude from inner peripheral edges of the respective planar yokes and which are disposed to face each other extending in an axial direction, and a cylindrical ring provided on outer peripheral edges of one of said planar yokes;

an armature being constituted by installing a coil formed by winding a magnet wire in a coil receiving section shaped like an annular recess formed by said planar yokes, said polar teeth, and said cylindrical ring of said stator yokes; and

a stator assembly which has flanges with bearings provided on both end surfaces of said armature and in which a rotor provided with a magnet for a magnetic field composed of a permanent magnet being installed to face said polar teeth of said stator with a minute gap provided therebetween;

wherein a number of said polar teeth equals a number N of rotor magnetic poles,

A) an extension of said two polar teeth in a circumferential direction are all the same and stay within a range of 220/N to 260/N degrees at central angle,

B) said polar teeth of said first and second stator yokes, respectively, are disposed at a spacing of approximately 180 degrees in terms of an electrical angle,

C) a relationship between a detent torque T_d (Nm) and a rated torque T_{rate} (Nm) is as follows: $T_{rate}/4 \leq T_d \leq 8T_{rate}/4$ where T_{rate} denotes a maximum torque value obtained when a rated current is passed, and detent torque T_d denotes a maximum torque when a coil is in a deenergization mode, and

D) rotation of said rotor is restricted by a stopper so that a maximum angle of the rotational motion stays within a range of 120/N to 240/N degrees.

12. (previously presented) An actuator according to Claim 11, wherein said stator yoke is comprised of a first stator yoke in which a planar yoke and a polar tooth are combined into one piece, and a second stator yoke in which a planar yoke, a polar tooth and a cylindrical ring are combined into one piece.

13. (previously presented) An actuator according to Claim 11, wherein a pair of stator yokes, each being composed of said planar yoke and said cylindrical ring that are combined into one piece, are disposed to face each other.

14. (previously presented) An actuator according to Claim 11, wherein said stopper is incorporated in said actuator.

15. (previously presented) An actuator according to Claim 11, wherein a cut for destroying magnetic balance is provided in an axial direction on a central portion of one of a south pole and a north pole of said magnet for magnetic field.

16. (previously presented) An actuator according to Claim 11, wherein air gaps in a radial direction formed by said polar teeth and said rotor magnet are uneven, and air gaps at central portions of said polar teeth are narrower than air gaps at ends of said polar teeth.

17. (previously presented) An actuator according to Claim 11, wherein said flanges are composed of a non-magnetic material.

18. (previously presented) An actuator according to Claim 1, wherein the number of rotor magnetic poles is two.

19. (previously presented) An actuator according to Claim 1, wherein said bearings are composed of a nonmagnetic material or a nonferrous oil-impregnated metal.

20. (previously presented) An actuator according to Claim 1, wherein said actuator is implemented as an actuator for a shutter of a camera.

21. (previously presented) A claw pole type actuator of a single-phase structure, said actuator comprising:

a stator yoke composed of a pair of substantially circular planar yokes formed of a soft magnetic material, a number N of polar teeth which axially protrude from inner peripheral

edges of the respective planar yokes and which are disposed to face each other, extending in an axial direction, and a cylindrical ring provided along the outer peripheral edge of one of said planar yokes;

an armature being constituted by installing a coil formed by winding a magnetic wire in a coil receiving section shaped like an annular recess formed by said planar yokes, said polar teeth, and said cylindrical ring of said stator yoke;

a rotor being concentrically disposed within the stator yoke and being adapted for repetitive rotational movement within a set angular range in response to energization of said coil, said angular range being less than 360 degrees and having its endpoints defined by a first angular position and a second angular position, and wherein said rotor is further adapted to be held in either said first angular position or said second angular position by a magnetic detent torque when said coil is deenergized, said rotor having a substantially cylindrical magnet, said magnet having a number of magnetic poles equal to the number N of said polar teeth, and wherein either magnetic pole of said magnet is axially cut to forcibly destroy magnetic balance between the magnetic poles; and

a stator assembly which has flanges with a bearing provided on both end surfaces said armature, and in which said rotor is installed to face said polar teeth with a minute gap provided therebetween.

22. (previously presented) An actuator according to Claim 21, wherein the number of rotor magnetic poles is two.

23. (previously presented) An actuator according to Claim 21, wherein said stator yoke is comprised of a first stator yoke in which a planar yoke and a polar tooth are combined into one piece, and a second stator yoke in which a planar yoke, a polar tooth, and a cylindrical ring are combined into one piece, and wherein said polar teeth are respectively disposed at a spacing of approximately 180 degrees in terms of an electrical angle.

24. (previously presented) An actuator according to Claim 21, wherein a pair of stator yokes, each being composed of said planar yoke and said cylindrical ring that are combined into one piece, are disposed to face each other.

25. (previously presented) An actuator according to Claim 21, wherein the cut of said magnet is set within a range of 45 degrees to 80 degrees at central angle.

26. (previously presented) An actuator according to Claim 21, wherein the cut of said magnet is positioned parallel to the neutral of said magnet.

27. (previously presented) An actuator according to Claim 21, wherein the north pole of said magnet is axially cut.

28. (previously presented) An actuator according to Claim 21, wherein the south pole of said magnet is axially cut.

29. (currently amended) An actuator according to Claim ~~20~~ 21, wherein said flanges are composed of a nonmagnetic material.

30. (currently amended) An actuator according to Claim ~~20~~ 21, wherein said bearings are composed of a nonmagnetic material or a nonferrous oil-impregnated metal.

Remarks:

Pursuant to 37 CFR 1.312, Applicant hereby submits the following amendment to make claims 29 and 30 depend from claim 21 rather than claim 20. Payment of the issue fee accompanies this amendment. It is believed that this amendment complies with the terms of 37 CFR 1.312 and MPEP 714.16.

This amendment attends to a formal matter in the listing of the claims' dependencies. It is respectfully submitted that this amendment is necessary for the proper protection of the invention because it relates to ensuring that the claims recite the appropriate dependency relationship. Applicant further respectfully submits that this amendment requires no substantial amount of additional work on the part of the Office because of the minor nature of the change. The need for this amendment arose from inadvertent error on the part of the undersigned. The proposed amendment does not require new search or examination as it relates only to the dependency relationships of already allowed claims.

For the foregoing reasons, entry of this amendment is respectfully requested. Also, it is believed that no fee is due for entry of this amendment. However, if fees are required, please charge Deposit Account 20-0823 as appropriate.

Respectfully submitted,

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